Claims

[c1] An optical signal receiver comprising:
a transimpedance amplifier having a voltage supply, a ground, an analog input, a data output providing a data output signal, and a data bar output providing a data bar output signal;
a photo detecting element having a first terminal coupled to said analog input of said transimpedance amplifier, and a second terminal providing an RPM output signal,
said data bar output being coupled to said second terminal of said photodiode whereby said data bar output signal and said RPM output signal are superimposed;
a current sense circuit coupled to said superimposed RPM and data bar output signals and configured to extract said RPM data signal from said superimposed RPM and data bar output signals to thereby provide a RPM output signal; and
a filter coupled to said superimposed RPM and data bar output signals and configured to block said RPM signal from said superimposed data bar and RPM signals to thereby provide a data bar output signal.

[c2] The optical signal receiver of claim 1 further comprising feedback means for preventing an AC component of said data bar output signal from feeding back to said analog input of said transimpedance amplifier.

[c3] The optical signal receiver of claim 1 further comprising filter means for filtering a DC component of said data bar output.

[c4] The optical signal receiver of claim 2 further comprising feedback means for preventing said RPM output signal from feeding back to said data bar output.

[c5] The optical signal receiver of claim 1 further comprising a feedback capacitor and a feedback resistor coupled between said second terminal of said photo detecting element and said data bar output and configured to prevent an AC component of said data bar output signal from feeding back to said analog input of said transimpedance amplifier.

[c6] The optical signal receiver of claim 1 further comprising a filtering capacitor

connected to said data bar output and configured to filter a DC component of said data bar output signal from passing through.

[c7] The optical signal receiver of claim 2 further comprising a filtering capacitor connected to said data bar output and configured to filter a DC component of said data bar output signal from passing through.

[c8] An optical signal receiver comprising:
a housing having four contact leads;
a transimpedance amplifier within said housing having a voltage supply coupled to a first of said contact leads, a ground coupled to a second of said contact leads, an analog input, a data output connected to a third of said contact leads to provide a data output signal, and a data bar output coupled to a fourth of said contact leads to provide a data bar output signal;
a photo detecting element within said housing having a first terminal coupled to said analog input of said transimpedance amplifier, and a second terminal coupled to said fourth contact lead to provide an RPM output signal,
said data bar output signal and said RPM output signal being superimposed on said fourth contact lead;
a current sense circuit external of said housing coupled to said fourth contact lead and configured to extract said RPM data signal from said superimposed RPM and data bar output signals to thereby provide a RPM output signal; and
a filter external of said housing coupled to said fourth contact lead and configured to block said RPM signal from said superimposed data bar and RPM signals to thereby provide a data bar output signal.

[c9] The optical signal receiver of claim 8 further comprising feedback means for preventing an AC component of said data bar output signal from feeding back to said analog input of said transimpedance amplifier.

[c10] The optical signal receiver of claim 8 further comprising filter means for filtering a DC component of said data bar output.

[c11] The optical signal receiver of claim 9 further comprising filter means for filtering a DC component of said first data output.

[c12] The optical signal receiver of claim 8 further comprising a feedback capacitor and a feedback resistor coupled between said second terminal of said photo detecting element and said data bar output and configured to prevent an AC component of said data bar output signal from feeding back to said analog input of said transimpedance amplifier.

[c13] The optical signal receiver of claim 8 further comprising a filtering capacitor connected to said data bar output and configured to filter a DC component of said data bar output signal from passing through.

[c14] The optical signal receiver of claim 9 further comprising a filtering capacitor connected to said data bar output and configured to filter a DC component of said data bar output signal from passing through.

[c15] A method of operating an optical signal receiver to provide 5 signals from only 4 separate contact leads of an optical signal receiver housing package, said method comprising the steps of:
providing an optical signal receiver housing have four external contact leads;
providing a transimpedance amplifier within said housing, said transimpedance amplifier having a voltage supply coupled to a first of said contact leads, a ground coupled to a second of said contact leads, an analog input, a first data output connected to a third of said contact leads to provide a first data output signal, and a complementary second data output;
providing a photo detecting element within said housing, said photo detecting element having a first terminal coupled to said analog input of said transimpedance amplifier, and a second terminal coupled to said fourth contact lead to provide an RPM output signal;
coupling said first data output and said cathode to a fourth of said contact leads so as to superimpose said first data output signal and said RPM output signal on said fourth contact lead;
extracting, external of said housing, said RPM data signal from said superimposed RPM and first data output signals to thereby provide a RPM output signal; and
filtering, externally of said housing, said RPM signal from said superimposed

first data and RPM signals to thereby provide a first data output signal.

[c16] The method of claim 15 further comprising the step of preventing an AC component of said first data output signal from feeding back to said analog input of said transimpedance amplifier.

[c17] The method of claim 15 further comprising the step of filtering a DC component of said first data output signal.

[c18] The method of claim 16 further comprising the step of filtering a DC component of said first data output signal.

[c19] An optical signal receiver comprising:
a transimpedance amplifier having a voltage supply, a ground, an analog input, a first data output providing a first data output signal, and a second data output providing a complementary second data output signal;
a photo detecting element having a first terminal coupled to said analog input of said transimpedance amplifier, and a second terminal providing an RPM output signal,
said first data output being coupled to said second terminal of said photo detecting element whereby said first data output signal and said RPM output signal are superimposed;
a current sense circuit coupled to said superimposed RPM and first data output signals and configured to extract said RPM data signal from said superimposed RPM and first data output signals to thereby provide a RPM output signal; and
a filter coupled to said superimposed RPM and first data output signals and configured to block said RPM signal from said superimposed first data and RPM signals to thereby provide a first data output signal.

[c20] The optical signal receiver of claim 19 further comprising feedback means for preventing an AC component of said first data output signal from feeding back to said analog input of said transimpedance amplifier.

[c21] The optical signal receiver of claim 19 further comprising feedback means for preventing said RPM output signal from feeding back to said data bar output.

[c22] The optical signal receiver of claim 20 further comprising filter means for filtering a DC component of said data bar output.

[c23] The optical signal receiver of claim 19 further comprising a feedback capacitor and a feedback resistor coupled between said second terminal of said photo detecting element and said data bar output and configured to prevent an AC component of said data bar output signal from feeding back to said analog input of said transimpedance amplifier.

[c24] The optical signal receiver of claim 19 further comprising a filtering capacitor connected to said data bar output and configured to filter a DC component of said data bar output signal from passing through.

[c25] The optical signal receiver of claim 20 further comprising a filtering capacitor connected to said data bar output and configured to filter a DC component of said data bar output signal from passing through.

[c26] An optical signal receiver comprising:
a housing having four contact leads;
a transimpedance amplifier within said housing having a voltage supply coupled to a first of said contact leads, a ground coupled to a second of said contact leads, an analog input, a first data output connected to a third of said contact leads to provide a first data output signal, and a complementary second data output coupled to a fourth of said contact leads to provide a second data output signal;
a photo detecting element within said housing having a first terminal coupled to said analog input of said transimpedance amplifier, and a second terminal coupled to said fourth contact lead to provide an RPM output signal,
said first data output signal and said RPM output signal being superimposed on said fourth contact lead;
a current sense circuit external of said housing coupled to said fourth contact lead and configured to extract said RPM data signal from said superimposed RPM and first data output signals to thereby provide a RPM output signal; and
a filter external of said housing coupled to said fourth contact lead and configured to block said RPM signal from said superimposed first data and RPM

signals to thereby provide a first data output signal.

[c27] The optical signal receiver of claim 26 further comprising feedback means for preventing an AC component of said first data output signal from feeding back to said analog input of said transimpedance amplifier.

[c28] The optical signal receiver of claim 26 further comprising filter means for filtering a DC component of said first data output.

[c29] The optical signal receiver of claim 27 further comprising filter means for filtering a DC component of said first data output.

[c30] The optical signal receiver of claim 26 further comprising a feedback capacitor and a feedback resistor coupled between said second terminal of said photo detecting element and said first data output and configured to prevent an AC component of said first data output signal from feeding back to said analog input of said transimpedance amplifier.

[c31] The optical signal receiver of claim 26 further comprising a filtering capacitor connected to said first data output and configured to filter a DC component of said first data output signal from passing through.

[c32] The optical signal receiver of claim 27 further comprising a filtering capacitor connected to said first data output and configured to filter a DC component of said first data output signal from passing through.